



US 20190218501A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2019/0218501 A1**
(43) **Pub. Date:** **Jul. 18, 2019**(54) **FLUID PUMPING AND BIOREACTOR SYSTEM****Publication Classification**(71) Applicant: **DEKA Products Limited Partnership**,
Manchester, NH (US)(72) Inventors: **Dean Kamen**, Bedford, NH (US);
Jason A. Demers, Manchester, NH
(US); **Frederick Morgan**, Canton, MA
(US); **Timothy D. Moreau**, Manchester,
NH (US); **Brian D. Tracey**, Litchfield,
NH (US); **Matthew Ware**, Merrimack,
NH (US); **Dirk A. van der Merwe**,
Canterbury, NH (US); **Richard J.**
Lanigan, Concord, NH (US); **Michael**
A. Baker, Manchester, NH (US); **David**
Blumberg, JR., Deerfield, NH (US)(51) **Int. Cl.***C12M 1/36* (2006.01)
C12M 1/12 (2006.01)
C12M 3/00 (2006.01)
C12M 1/00 (2006.01)
A61L 27/36 (2006.01)
C12N 5/071 (2006.01)
A61L 27/38 (2006.01)(52) **U.S. Cl.**CPC *C12M 41/48* (2013.01); *C12M 25/14*
(2013.01); *C12M 23/42* (2013.01); *C12M*
23/40 (2013.01); *A61L 27/38* (2013.01); *A61L*
27/3683 (2013.01); *C12N 5/0602* (2013.01);
C12M 21/08 (2013.01); *C12M 29/00*
(2013.01)(21) Appl. No.: **16/360,330**(22) Filed: **Mar. 21, 2019****Related U.S. Application Data**(62) Division of application No. 15/288,900, filed on Oct.
7, 2016, now Pat. No. 10,294,450.(60) Provisional application No. 62/246,191, filed on Oct.
26, 2015, provisional application No. 62/239,793,
filed on Oct. 9, 2015, provisional application No.
62/266,548, filed on Dec. 11, 2015.

(57)

ABSTRACT

A fluid pumping and bioreactor system including at least two cassettes, at least one storage reservoir, at least one bioreactor, at least one manifold including valve modules, and tubing to connect the cassettes to the storage reservoir and the bioreactor. The cassettes can include pumps, valves, and fluid conduits and can be communicatively connected to the at least one manifold. The bioreactor can include an adapter and fluid conduits extending through the adapter from the exterior of the bioreactor to the interior of the bioreactor. System and method for generating a tissue for transplant by decellularizing and recellularizing a supplied tissue.

